*भारतीय मानक*
***Indian Standard***

**IS 1874 : 2018**

# जस्ता क्रोम, सर्विक, प्राइमिंग ( संश्लिष्ट ) तैयार मिश्रित रंग रोगन, हल्की मिश्र धातुओं के लिए विशिष्टि

*( दूसरा पुनरीक्षण )*

# Ready Mixed Paint, Universal, Zinc Chrome, Priming (Synthetic) for Light Alloys — Specification

*( Second Revision )*

ICS 87.40

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भारतीय मानक ब्यूरो
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Paints, Varnishes and Related Products Sectional Committee, CHD 20

## FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Paints, Varnishes and Related Products Sectional Committee had been approved by the Chemical Division Council.

This primer is intended to be a universal primer, specially suitable for priming light alloys used in aircraft and marine industry. The material is suitable for use with all synthetic finishes, with the exception of special ester lubricant oil resistant finishes.

This standard was first published in 1962. It was revised in 1992 after fully aligning this standard with document CQAEM/SS/106, January 1990 'Specification for paint, PFU priming, zinc chrome, universal synthetic (brushing/spraying)' issued by the Department of Standardization, Ministry of Defence, Government of India. In this revision the composition had been revised and salt spray test had been made more stringent to suit even the use of Navy as fire retardant paint.

This is one of the few standards where restriction of lead has already been prescribed as 5 percent when calculated as lead monoxide. Revision of this standard has been taken up with a view to modify the prescribed limit of lead restriction in this standard. The Technical Committee responsible for the formulation of this standard observed that in practice most of the paints are used for household/decorative as well as in industrial/commercial applications. Taking cognizance of the fact that lead exposure of human being, particularly children in residential premises is injurious to health with adverse effect on environment and safety, the Technical Committee felt the need to introduce different level of lead restriction in all paint standards likely to be used for household and decorative applications. Concurrently it was also decided to introduce lead restriction in few of the industrial products, as far as possible, keeping in mind relevancy of lead restriction w.r.t application condition and service life of the paint and wherever the product corresponding to a particular specification is of such composition that it would be easy to incorporate lead restriction without creating any negative impact.

The Committee observed that this is a chrome based product and technologically it is not feasible to manufacture with low limit of lead. The Committee also observed from the scope that this product is used for protection of light alloys and steelwork and is used in both under marine and inland outdoor conditions. Therefore, the Committee decided to modify maximum permissible limit of lead as 1 000 ppm to avoid hazardous impact of lead exposure on environment, human health and marine life.

Further, majority of consumers are not aware of the consequences of lead toxicity and its long-term implications to human health. Therefore, in this revision, alongwith lead restriction, a suitable cautionary notice has been included in the marking clause. In this revision the efflux time has been termed as viscosity, formulation of artificial sea water is brought in line with IS 101(Part 6/Sec 1) and preparation of test sample/panels is described in details.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Indian Standard*

# READY MIXED PAINT, UNIVERSAL, ZINC CHROME, PRIMING (SYNTHETIC) FOR LIGHT ALLOYS — SPECIFICATION

*( Second Revision )*

## 1 SCOPE

This standard prescribes the requirements and methods of sampling and test for the material commercially known as ready mixed paint, universal, zinc chrome, priming (synthetic) for light alloys. The material is used for the protection of light alloys and in some cases steel work. It may be used both under marine and inland outdoor conditions. The primed surfaces will normally be overcoated with interior fire retardant paints.

## 2 REFERENCES

The standards listed in Annex A contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated in Annex A.

## 3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 1303 shall apply.

## 4 REQUIREMENTS

### 4.1 Composition

The material shall be manufactured with the following ingredients:

a) The mass of pigment of total solids shall not be less than 65 percent;

b) The amount of zinc chrome pigment, conforming to Type 2 of IS 51 shall not be less than 40 percent, by mass of the total amount of pigment the paint, when tested as prescribed Annex B. It shall correspond to a minimum of 17.2 percent of chromic anhydride ($CrO_3$) and 14.6 percent zinc oxide (ZnO); and

c) Non-volatile vehicle consisting of a drying oil, modified phenolic or phenolic alkyd resin varnish containing refined linseed oil; thinners and driers in suitable proportions so to satisfy the requirements of this standard.

**4.1.1** The linseed oil, refined, may be replaced wholly or in part by tung oil (*see* IS 80).

**4.1.2** The materia1 shall be suitable for use with oleoresinous synthetic and nitrocellulose based undercoats, surfacers, fillers, putties and etch primer.

### 4.2 Applications

**4.2.1** *Compatibility with Thinner*

The thinner used shall be petroleum hydrocarbon (*see* IS 1745). The material shall be suitable for thinning with thinners used for synthetic paints and varnishes for aircrafts (*see* IS 1872).

**4.2.2** *Suitability for Spraying*

The material shall be suitable for use by spraying when diluted with not more than 10 percent of thinner for synthetic paints and varnishes for aircrafts (*see* IS 1872).

**4.2.2.1** White spirit with an aromatic content of not more than 20 percent shall be used when the material is intended for use by the Navy.

### 4.3 Lead Restriction

**4.3.1** The material shall not contain lead or compounds of lead or mixtures of both, calculated as metallic lead more than 1 000 ppm, when tested for restriction from lead in accordance with IS 101(Part 8/Sec 5).

**4.4** The material shall also comply with the requirements given in Table 1.

## 5 PACKING AND MARKING

### 5.1 Packing

Unless otherwise agreed to between the purchaser and the supplier in sound, clean dry barrels of suitable capacity provided the containers do not have any action on the material, the paint shall be packed in metal containers conforming to IS 1407 or IS 2552. The packing is subject to the provisions of the law in force in the country at that time.

### 5.2 Marking

**5.2.1** Each container shall be marked with the following information:

a) Name of the material;

### Table 1 Requirements for Ready Mixed Paint, Universal, Zinc Chrome, Priming (Synthetic) for Light Alloys

( *Clause* 4.4)

| **Sl No.** | **Characteristic** | **Requirement** | **Methods of Test, Ref to** | |
|---|---|---|---|---|
| | | | Annex of this Standard | IS 101 |
| (1) | (2) | (3) | (4) | (5) |
| i) | Drying time, *Max* | | — | (Part 3/Sec 1) |
| | a) Surface dry | 2 h | | |
| | b) Hard dry | 8 h | | |
| ii) | a) Consistency | Smooth, uniform and suitable for spraying | C | — |
| | b) Viscosity by ford cup No. 4 at 27 ± 2°C | Between 80s and 120s | — | (Part 1/Sec 5) |
| iii) | Mass, in kg/10 litre | 14.0 ± 0.5 | — | (Part 1/Sec 7) |
| iv) | Finish | Smooth and eggshell flat | — | (Part 3/Sec 4) |
| v) | Colour | As that of zinc chrome | — | (Part 4/Sec 2) |
| vi) | Gloss (specular) 60°, *Max* | 15 | — | (Part 4/Sec 4) |
| vii) | Fineness of grind, *Max* | 50 | — | (Part 3/Sec 5) |
| viii) | Wet opacity m$^2$ /10 litre | 80 | — | 2 of (Part 4/Sec 1) |
| ix) | Flexibility and adhesion | | | |
| | a) Scratch hardness | No such scratch as to show the bare metal | — | **3** of (Part 5/Sec 2) |
| | b) Bend test (with 6.25 mm dia mandrel and in type1 apparatus) | No visible damage or detachment or cracking | — | **2** of (Part 5/Sec 2) |
| x) | Resistance to humidity under conditions of condensation | | | |
| | a) Resistance to humidity | To pass the test | — | **2** of (Part 6/Sec 1) |
| | b) Resistance to salt spray (expose for 96 h) | The paint film shall show no signs of break-down and the underlying metal shall be free from corrosion | — | **3** of (Part 6/Sec 1) |
| | c) Resistance to sea water (applicable for paints for marine applications only) | To pass the test | D | — |
| xi) | Flash point | Not below 30°C | — | (Part 1/Sec 6) |
| xii) | Presence of phenol (in dry vehicle) | Positive | — | IS 354 (Part 3) |
| xiii) | Fire retardness test applicable for paints for defence purposes only) | To pass the test | E | — |
| xiv) | Accelerated storage stability test | To pass the test | F | — |
| xv) | Keeping properties | Not less than six months from the date of manufacturing | — | (Part 6/Sec 2) |

b) Indication of the source of manufacture;
c) Lead content, *Max*;
d) Mass of the material;
e) Batch number or Lot number in code or otherwise;
f) Month and year of manufacture; and
g) A cautionary note as below:
    1) Keep out of reach of children.
    2) Dried film of this paint may be harmful if eaten or chewed.
    3) This product may be harmful if swallowed or inhaled.

**5.2.1.1** The material when intended for defence purposes, shall be marked in accordance with IS 5661.

**5.2.2** *BIS Certification Marking*

The container may also be marked with the Standard Mark.

**5.2.2.1** The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act,* 2016 and the Rules and Regulations made there under. The details of conditions under which the Iicence for the use of the Standard Mark may be granted to manufacturers or producers maybe obtained from the Bureau of Indian Standards.

## 6 SAMPLING

**6.1** Representative samples of the material shall be drawn as prescribed in IS 101 (Part 1/Sec 1).

### 6.2 Preparation of Test Samples

**6.2.1** *For Drying Time*

Prepare mild steel panel of sizes 150 mm × 100 mm × 1.25 mm as prescribed in **2** of IS 101 (Part 1/Sec 3). Apply one coat of the paint uniformly on each side of the panel by brushing to give a dry film mass commensurate with the mass per 10 litre as specified in Table 1 of IS 101 (Part 3/Sec 4). Prepared test panel then subjected to the test as specified in IS 101 (Part 3/ Sec 1) as soon as possible.

**6.2.3** *For Flexibility and Adhesion Test*

For bend test prepare aluminium panels, rectangular, of sizes 100 mm × 50 mm × 0.3 mm as prescribed in **4** of IS 101(Part 1/Sec 3). Apply one coat of material uniformly by brushing on the panel as to give a dry film mass commensurate with the mass per 10 litre as specified in Table 1 of IS 101(Part 3/Sec 4). The coated test panel shall be dried for 48 h and then shall be conditioned at a temperature of 27° ± 2°C and relative humidity of 65 ± 5 percent for a minimum time of 16 h. Prepared test panel the subjected to the test as prescribed in **2** of IS 101 (Part 5/Sec 2).

### 6.3 Criteria for Conformity

A lot shall be declared as conforming to the requirements of this standard if the test results of the composite sample satisfy the requirements prescribed under **4**.

## 7 TEST METHODS

**7.1** Tests shall be conducted as prescribed in and **4.1** to **4.3** and in col 4 and 5 of Table 1.

### 7.2 Quality of Reagents

Unless otherwise specified, pure chemicals and distilled water (*see* IS 1070) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the result of analysis.

## ANNEX A

## ( *Clause* 2)

## LIST OF REFERRED INDIAN STANDARDS

| *IS No.* | *Title* |
|---|---|
| 51 : 1998 | Zinc chrome for paints — Specification (*fourth revision*) |
| 80 : 1991 | Tung oil for paints — Specification (*second revision*) |
| 101 | Methods of sampling and test of paints, varnishes and related products, |
| Part 1 | Test on liquid paints (general and physical), |
| Sec 1 : 1986 | Sampling (*third revision*) |
| Sec 3 : 1986 | Preparation of panels (*third revision*) |
| Sec 5 : 1986 | Consistency (*third revision*) |
| Sec 6 : 1987 | Flash point (*third revision*) |
| Sec 7 : 1987 | Mass per 10 litres (*third revision*) |
| Part 3 | Tests on paint film formation, |
| Sec 1 : 1986 | Drying time (*third revision*) |
| Sec 2 : 1989 | Film thickness (*third revision*) |
| Sec 4 : 1987 | Finish (*third revision* ) |
| Sec 5 : 1988 | Fineness of grind (*third revision*) |
| Part 4 | Optical test, |
| Sec 1 : 1988 | Opacity (*third revision*) |
| Sec 2 : 1989 | Colour (*third revision*) |
| Sec 4 : 1988 | Gloss (*third revision*) |
| (Part 5/Sec 2) : 1988 | Mechanical test on paint films, Section 2 Flexibility and adhesion (*third revision*) |
| Part 6 | Durability tests on paint films, |
| Sec 1 : 1988 | Resistance to humidity under conditions of condensation (*third revision*) |
| Sec 2 : 1989 | Keeping properties (*third revision*) |
| (Part8/Sec5) : 1993 | Tests for pigments and other solids, Section 5 Lead restriction test (*third revision*) |
| 266 : 1993 | Sulphuric acid (*third revision*) |
| 354 (Part 2) : 1986 | Methods of sampling and test for resins for paints: Part 2 Special test methods for alkyd resins (*second revision*) |
| 1070 : 1992 | Reagent grade water (*third revision*) |
| 1303 : 1983 | Glossary of terms relating to paints (*second revision*) |
| 1407 : 1977 | Specification for round paint tins (*second revision*) |
| 1745 : 1978 | Specification for petroleum hydrocarbon solvent (*second revision*) |
| 1872 : 1961 | Specification for thinner for synthetic paints and varnishes for aircrafts |
| 2316 : 1990 | Methods of preparation of standard solutions for colorimetric and volumetric analysis (*second revision*) |
| 2552 : 1979 | Specification for steel drums (galvanized and ungalvanized) *second revision*) |
| 13119 : 1991 | Ammonium bifluoride |

# ANNEX B

[*Clause* 4.1 (b)]

## DETERMINATION OF CHROMIC ANHYDRIDE AND ZINC OXIDE

### B-0 OUTLINE OF THE METHOD

**B-0.1** Chromic anhydride is determined by titrating the iodine liberated from potassium iodide with standard sodium thiosulphate solution. Zinc oxide is determined in the same solution by titrating the iodine subsequently liberated on addition of potassium ferricy-anide, with standard sodium thiosulphate solution.

### B-l REAGENTS

**B-1.1 Dilute Sulphuric Acid** — approximately 7 N (*see* IS 266).

**B-1.2 Potassium Iodide Solution** — freshly prepared, 10 percent.

**B-1.3 Standard Sodium Thiosulphate** — 0.1 N (*see* **57** of IS 2316).

**B-1.4 Starch Solution** — 0.5 percent (freshly prepared).

**B-1.5 Potassium Ferricyanide Solution**, M/10, prepared in cold water, filtered rapidly and kept in a dark bottle. The solution can be suitably used for seven days if kept in dark when not in use.

**B-1.6 Ammonium Bifluoride $(NH_4)HF_2$** — Solid (*see* IS 13119).

**B-1.7 Sodium Hydroxide Solution** — 10 percent approximately.

### B-2 PROCEDURE

**B-2.1** Weigh accurately about 1 g of the pigment in a 250-ml beaker and add about 100 ml of sodium hydroxide solution. Stir well by rubbing with a glass rod and boil slowly for 5 min over a wire gauze. Place the beaker, covered with a watch-glass,on a water-bath for about half an hour. Filter over filter paper ( Whatman No. 42 ) in a 500-ml conical flask. Wash well with hot water until the residue is free from chromate. Cool the filtrate in ice water and neutralize it with dilute sulphuric acid. Add 30 ml of dilute sulphuric acid after neutralization and cool. Then estimate chromic anhydride and zinc oxide content as given in **B-2.2**, **B-2.3** and **B-2.4**.

**B-2.2** Transfer the solution to a 500 ml iodine flask containing 100 ml of water and 20 ml of dilute sulphurie acid. Add 30 ml of potassium iodide solution and allow to stand for 5 min. Titrate the liberated iodine with standard sodium thiosulphate solution after adding 5 ml of starch solution as indicator. Note the volume of sodium thiosulphate solution used in the titration ($V_1$).

**B-2.3** After the titration for chromic anhydride, add ammonia solution drop wise until the litmus test paper first turns blue. (An excess of ammonia solution, more than 3 to 4 drops, should not be added as it is essential that the blue litmus should turn red with ammonium bifluoride to be added subsequently.) Cool and add 2 to 3 g of ammonium bifluoride and sufficient water to make volume approximately 250 ml. Sometime traces of iodine liberated during neutralization can be cleared by one or two drops of sodium thiosulphate solution Add $V_1/3$ ml of potassium ferricyanide solution. Stir and allow to stand for about 2 min. Titrate the liberated iodine with standard thiosulphate solution. After the end point, the colour of the test solution will be bright pale greenish-yellow. Note the volume of sodium thiosulphate solution used in the second titration ($V_2$). If $V_2$ is less than 6 ml, the titration is to be repeated with the addition of ($V_2$ + 2) ml of potassium ferricyanide solution in place of $V_1/3$ ml.

**B-2.4** If $V_2$ is less than 2 ml, the titration to be repeated, starting from the extracted pigment, with the addition of 5 ml of potassium ferricyanide solution.

### B-3 CALCULATION

**B-3.1** Chromic anhydride ($CrO_3$), percent by mass

$$= \frac{3.334 \times V_1 \times N}{M}$$

where

$V_1$ = volume in ml of sodium thiosulphate solution used in the first titration,

$N$ = normality of sodium thiosulphate solution used, and

$M$ = mass in g of the material taken for the titration.

**B-3.2** Zinc oxide (ZnO), percent by mass

$$= \frac{12.45 \times V_2 \times N}{M}$$

where

$V_2$ = volume in ml of sodium thiosulphate solution used in the second titration,

$N$ = normality of sodium thiosulphate solution used, and

$M$ = mass in g of the material taken for the titration.

# ANNEX C

## [*Table* 1, *Sl No*. (ii) (a)]

## CONSISTENCY

### C-1 APPARATUS

**C-1.1 Palette Knife or Metal Rod**

**C-1.2 Glass Panels**

**C-1.2.1** Unless specified otherwise, glass panels of size 150 mm × 50 mm shall be prepared as prescribed in **5** of IS 101 (Part 1/Sec 3).

### C-2 PROCEDURE

**C-2.1** Insert a clean metal rod or palette knife into the original container and examine the nature of settling.

**C-2.2 Observations**

The material shall not form a hard cake inside the container and shall be in such a condition that stirring easily produces a smooth uniform paint suitable for brushing on glass panels.

# ANNEX D

## [*Table* 1, *Sl No*. (x) (c)]

## RESISTANCE TO NATURAL OR ARTIFICIAL SEA WATER

### D-0 GENERAL

**D-0.1 Outline of the Method**

This is the test for determination of resistance of paint films to natural or artificial sea water spray condensation conditions. The painted panel is immersed in natural or artificial sea water for specified period and paint film examined for any deterioration. If natural uncontaminated sea water is not available, then artificial sea water to be prepared for use in the test.

### D-1 COMPOSITION OF NATURAL SEA WATER

**D-1.1** The natural sea water should be taken for not less than one foot below the surface by a method which does not contaminate from the surface layer. In areas where there is pronounced tidal action, the water should be taken near full flood and shall have a *p*H of 7.9 to 8.3 and initially have a chlorinity of not less than 17 parts and salinity of 31 parts per 1 000.

NOTE — The chlorinity and consequently salinity of natural sea water on the Indian coast line is subject to variations due to the monsoon. Dilution occurs during this period, lowering these values considerably. This period usually varies from 3 to 4 months during the year. In the other months, salinity is equal to or even higher than the artificial sea water but seldom exceeds 36 to 37 parts. This rise in salinity, however, has not a very significant effect on the test.

### D-2 COMPOSITION OF ARTIFICIAL SEA WATER

**D-2.1** The artificial sea water is prepared as described in **4.2** of IS 101(Part 6/Sec 1).

### D-3 APPARATUS

**D-3.1** The apparatus used is as described in **4.3** of IS 101(Part 6/Sec 1).

### D-4 PROCEDURE

**D-4.1 Preparation of Test Panels**

Prepare a panel of 150 mm × 50 mm × 1.25 mm mild steel plate as described in **2** of IS 101 (Part 1/Sec 3). Apply one coat of the paint uniformly on each side of the panel by brushing to give a dry film mass commensurate with the mass per 10 litre as specified in Table 1 of IS 101(Part 3/Sec 4). Then allow to dry for 24 h. After seven days of application determine the thickness in micrometres, of the dry coating, by any appropriate method but using any one of the non-destructive procedures preferably as prescribed in **6.2.2.1** of IS 101(Part 3/Sec 2). Seal the edges of the panel with wax up to a depth of 6 mm by dipping in molten wax.

**D-4.2** Immerse the 75 mm of the test panels at room temperature for a period of seven days in natural or artificial sea water separately, which is aerated by a continuous slow stream of air free from oil or grease.

Examine the panels at the end of 7 days visually for signs of deterioration of the system. Also carefully remove 25 mm strip of the film from the centre of the panel along the length with a cotton wool swab soaked in suitable paint remover and examine the exposed metal for signs of corrosion, neglecting 25 mm portions of the exposed surface from each edge.

## D-5 OBSERVATIONS

**D-5.1** The material shall be deemed to have passed the test if the panel does not show damage, blistering or flaking of the paint film or any sign of under film corrosion.

# ANNEX E

[*Table* 1, *Sl No*. (xiii)]

## TEST FOR FIRE RETARDANCE

## E-1 APPARATUS

**E-l.1** It consists of an open fronted cabinet 460 mm × 300 mm × 320 mm (approx) constructed of fire-proof insulating board. Two runners, at top and bottom are provided to hold a 300 mm × 300 mm × 1.25 mm steel panel vertically, 150 mm from one end of the cabinet during the test. A provision is made to heat the centre of the panel by means of a gas ring burner, approximately 70 mm diameter positioned vertically in the larger compartment of the cabinet. The longitudinal distance of the burner from the centre of the panel is adjustable. Gas and air supplies to the burner are controlled by means of valves and manometers. A non-return valve shall be fitted to the gas supply line.

### E-1.2 Test Panels

Prepare a Mild steel panel of sizes 300 mm ×300 mm × 1.25 mm as described in **2** of IS 101 (Part 1/Sec 3).

## E-2 PROCEDURE

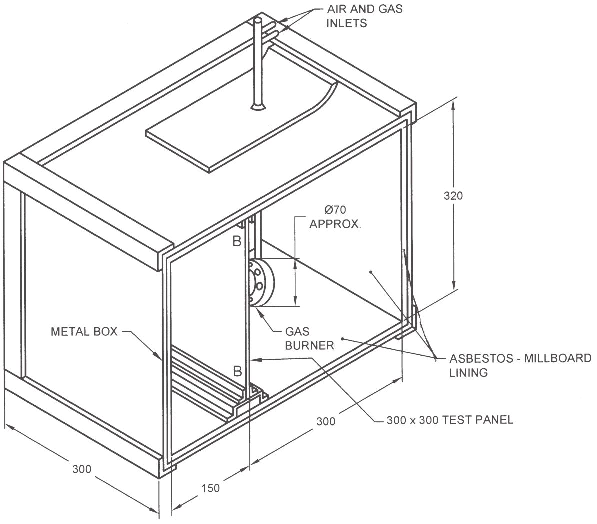
**E-2.1** Insert the 300 mm × 300 mm × 1.25 mm unpainted steel panel between the runners and shield it from the burner by means of a removable fire-proof sheet. Light the gas burner and adjust the gas and air flow to obtain the flame required to raise the impingement area to a dull heat in 25 ± 5 s from the time of removal of the protecting fire-proof sheet. When this has been obtained, record the manometer readings.

**E-2.2** Turn off the gas and air supply and replace the unpainted steel panel with the panel to be tested (*see* **E-1.2** ) ensuring that the npainted side of the panel is facing the burner and is shielded from it by means of the fireproof sheet. Re-light the burner and adjust the gas and air pressures to those recorded in **E-2.1**. Remove the fire-proof sheet and allow the flame to impinge on the test panel for 60s. A diagram of a suitable apparatus is given in Fig. 1.

## E-3 OBSERVATIONS

**E-3.1** Observe the behaviour of the paint film and test for evaluation of flammable gases by applying a lighted taper 10 s after commencement of the test. Examine the paint film after the 60 s burning time for signs of blistering, glowing of charred film and detachment from the substrate.

**E-3.2** It shall not show more than slight blistering, evaluation of flammable gas, glowing of charred film or detachment from the substrate. In these respects, it shall not be inferior to a film prepared from the approved sample and tested in the same manner.



All dimensions in millimetres.

NOTE — Experimentation with a number of unpainted panels using varying gas and air pressure will be required to obtain the correct rate of heating required.

Fig. 1 Fine Retardness Apparatus

# ANNEX F

[*Table* 1, *Sl No.* (xiv)]

## ACCELERATED STORAGE STABILITY TEST

### F-0 OUTLINE OF THE METHOD

The material is subjected to higher temperature and then tested for drying time, viscosity and gloss value.

### F-1 PROCEDURE

**F-l.1** Fill 250 ml of the paint sample in a clean, dry 500 ml metal container (*see* IS 1407) leaving usual spillage and seal the lid tightly to avoid leakage of volatile paint thinners. Keep the container at 60 ± 2°C for 96 h in an electrically heated oven. Take out the sample container and allow it to cool at room temperature for 24 h thereafter. The sample is subsequently examined for the appearance of the material. The material then shall be tested for drying time, viscosity and gloss value.

### F-2 OBSERVATIONS

The paint shall be deemed to have passed this test, if it is found to be free from lumps, skins, settling. The paint shall not gel, liver, curdle or increase in viscosity by more than 20 percent, and there shall be no evidence of seeding. The paint shall meet the drying time requirements and shall produce dry film that is uniform in appearance and free from streaking and mottling. Further the change in gloss value shall not be more than 5 units from that of original value.

NOTE — Keep the paint sample in the oven and gradually increase the temperature 60°C.

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